

Connecticut River Watershed Landscape Conservation Design
Core Team Meeting
June 27, 2014

Attendees

In Person

Ana Rosner, USGS
Andrew MacLachlan, USFWS, Science Applications
Andrew Milliken, USFWS, Science Applications
Andy Fisk, CT River Watershed Council/Friends of Conte Refuge
Bill Labich, Highstead/Friends of Conte Refuge
Chad Rittenhouse, University of Connecticut
Colleen Sculley, USFWS, WSFR
Dave Eisenhauer, USFWS, Science Applications
Dave Paulson, MassWildlife, NHESP
Dave Stier, Springfield Science Museum/Friends of Conte Refuge
Dave Perkins, USFWS, Fisheries
Ethan Plunkett, UMass
Jeff Horan, USFWS, Refuges
John Warner, USFWS, New England Field Office
Ken Elowe, USFWS, Science Applications
Ken Sprankle, USFWS, CT River Coordinators Office
Lori Pelech, USFWS, Science Applications
Maritza Mallek, USFWS, Science Applications
Marvin Moriarty, Friends of Conte Refuge
Mitch Hartley, USFWS, Migratory Birds/ACJV
Nancy McGarigal, USFWS, Refuges
Rachel Cliché, USFWS, Conte Refuge
Randy Dettmers, USFWS, Migratory Birds
Scott Schwenk, USFWS, Science Applications
Tim Wildman, CT DEEP
Dan Hocking, USGS

On Phone

Bill Jenkins, EPA
Bob Houston, USFWS, Gulf of Main FO
Emily Preston, NH Fish & Game
Eric Sorenson, VT Fish and Wildlife
Kevin McGarigal, UMass
Stacy Lemieux

I. Welcome (Nancy McGarigal)

- Nancy thanked those who have already filled out the SurveyMonkey questionnaire and asks those who have not done so to please fill it out when they have the chance. Responses have been very helpful so far.
- Folks are encouraged to watch the video of interviews with a few of the core team members. More people will be interviewed and added in the future (any volunteers?).

II. Update from Terrestrial Subteam (Randy Dettmers)

- Subteam met twice in June, focusing on species habitat modeling issues and related decisions.
- June 17: Kevin gave presentation giving details on terrestrial species modeling approach. Kevin provided several options for landscape scale indices based on climate change, urban development, etc. Various indices can be incorporated into the final models.
- June 23: Met to tackle a couple of issues. One was to review and confirm our approach to tackling underrepresented species. We plan to move forward with the landscape design process, using the 13 representative species, and then we have discussed a few individual sets of underrepresented species that we have data on their distribution: bats, tiger beetles, New England cottontail. Later, state partners will have an opportunity to review that relative to other underrepresented spp, and determine whether this model covers the underrepresented spp in which they are interested, and submit other spp for consideration if need be.
- Agreed to place higher weights on locations with stronger climate change resilience (e.g. persistence). There is also interest in trying to assess whether this will end up making sense on a spp-level. On the human development front, we propose to place higher weights on locations with high habitat suitability and high risk of loss in the future. We also talked a little bit about weighting criteria for final design. Came up with 3 criteria, similar to eco system side: degree of threat, regional responsibility, and regional rarity.
- Overarching ideas that have emerged: some participants have reservations about the merits of using representative spp versus just an ecological systems approach. There is also still some uncertainty about merging multiple datasets into one product and concerns that the final product will not be readily intelligible. People want to see the results of steps along the way for individual species so that they can better understand what it means when they are combined together.

Question: Andrew: Did the subteam discuss protecting areas beyond the range of the representative species being targeted that might become part of the spp range under a climate change scenario?

Response (Randy): It was discussed but the team felt that if they had to just pick one factor, that resilience to climate change was the top priority.

Question: Jeff: When do we think there will be a draft conservation design? What is the product that we want the states to be able to look at? Maybe Kevin already has an idea of this. My main point is that we should be thinking now about showing the results to the states

Response (Kevin): I can't fully answer that question for you because the answers are dependent upon the group coming to consensus and making various decisions, and the rate at which this happens. We can add in as many rare species as the group wants, but we have to have a map of their distribution to be able to do this. We would need any new species and their associated products very soon in order to be able to incorporate that data into the model.

Comment: Emily: the terrestrial team decided not to add more species because we wanted to see how the process would address the species that we are interested in. Does the landscape scale process preserve these habitats/species without explicitly adding them in? We know our data isn't perfect so it will be valuable to find this out.

III. Update from Aquatics Subteam (??)

- Probably met 5-6 times this month. Kevin was a big help with that.
- One of the tasks was to finalize the habitat classifications. We'd been having lots of discussion about temperature classes, etc. We were able to do this; the final list of aquatic ecological macrogroups is a handout associated with this meeting and is available on the NALCC website. Weighting the different macrogroups was discussed but the team decided to weight everything equally at first. We didn't have any unique or special habitats that seemed to merit weights.
- The next task was to look at the weighting for IEI metrics (also available online as one of the handouts associated with this meeting). Both refined and coarse-scale metrics were included. We kept in mind use of riparian areas by some species, so we kept metrics such as road traffic in there, which may seem irrelevant to aquatic habitats. We decided to treat tidal rivers as large rivers, but intertidal zones were left weighted the same as the previous group's decision.
- We acknowledge that this is a larger scale set of factors that affect species distributions, but don't include factors typically used to model individual species. We don't have the same depth of data as the terrestrial folks do, so our task is fairly different.
- In addition to the brook trout model, we'll be looking at temperature models. Just to reiterate what some of the terrestrial folks were talking about... We do have a sort of "manual override" for those cases where we feel, for example, that connectivity in a particular watershed is critical for some anadromous fish.
- We also tried to put together a representative species list. This is challenging but we can look to certain species to help us with our conservation design (besides brook trout, maybe anadromous fish, and rare aquatic species), and discussions around what species to include for this task will be a focus of this afternoon's meeting.

IV. Presentation by UMass DSL Team (Kevin McGarigal) (posted and not summarized here)

Question (Eric Sorenson): Is the core selection index available for us to look at?

Response: It's an interim product, not the final, but we can make it available to you for review. These are living documents that undergo frequent change. We're happy to share it as long as you understand it's not the final. (see slide 9)

Question: (Dave): So resiliency and stream temperature are only relevant to aquatics? Would they not factor in to core areas for terrestrial? It looks like stream temp weighting is affecting a terrestrial landscape on this slide.

Response: IEI is scaled by system, so each IEI is scaled by the relevant aquatic ecological system. The TNC data is comprehensive, so it's relevant to both. Stream temp only applies to headwater creeks. At each pixel, this map shows the average of the StreamTemp, Resiliency, and IEI. So the influence of headwater creeks is the same in both maps, because the headwater creeks are weighted 1. The differences between the two maps are due to resiliency and IEI weighting differences.

Dave: I was expecting that the areas where there is a different shade of blue to be a stream, but they don't look like a stream on this map. I also thought that the resiliency was confined to stream networks. So if it's affecting terrestrial lands too then I understand. (see slide 11)

Kevin pointed out that the CTR scaled selection index stands alone as its own product, and could be used as the final product. (see slide 12)

Question (Eric Sorenson): How in implementing this do we make sure that we're getting all the targets – ecosystems, landforms, etc.? (see slide 22)

Response: Because we're slicing the index by system and geophysical setting, it guarantees us that when we slice at the top 20%, that we are basically getting the top 20% of each system and geophysical setting. Now, because we're averaging and weighting, it's not guaranteed that you'll actually get the top 20% of everything, but roughly speaking we can say that we are getting a good representation of ecosystem and setting across the landscape. Actually, that was one of the main reasons for doing it this way.

Eric: So it means that we have to conserve all those areas in order to achieve that result.

Kevin: That's true, but it would be true regardless. The objectives of any design will only be achieved if that design is implemented.

Eric: I'm thinking of it in terms of keeping track. Probably we should keep track of what we've captured as we move along.

Kevin: I completely agree. And once we create the design, we can note the starting point of what is protected, and then we can make targets accordingly.

Eric: This is part of why I'd like to have these layers available during the process if possible.

Mitch: Have you considered scaling up to a larger pixel size and getting an average value for these areas and then you would have fewer core areas.

Kevin: There are lots of approaches to smoothing this image. One is to resample to a larger grid size. Other approaches include kernels, or the approach I'll talk about next, that allows users to provide meaningful input to direct the smoothing. On the other hand, smoothing does alter the representation of the fundamental data, which I don't think we want to mask or hide. The approach I discuss next is smoother but doesn't hide any of the details that went into the map.

Question (Eric): When smoothing happens, will some of the rare geophysical settings drop out? (see slide 23)

Response: Yes and no. We would generally keep the rare geophysical settings because the goal is to keep the top 5% of all geophysical settings and systems. The kernel is seeded based on this top 5%. What we lose is some of the top 30% in order to gain the area needed to create the larger shapes.

Emily: I also don't understand how the top 5% is retained if the habitats are all merged. Also, what if we want to retain the top 80% for certain rare geophysical settings?

Kevin: It is; I'll try to explain again. The idea behind the second question goes back to the selection index and weighting systems. If we want more representation by certain GPS, then we should weight them more. Going back to the % thing, to very much simplify things, if you were taking the top 5% of all GPS, and you weighted one GPS by 2 versus one for everything else, then you would have (roughly) the top 10% of that weighted GPS. He also explained the kernel smoothing algorithm (available on the webinar recording).

Bill: If the green blobs contain the core buffer areas and the top 5% of species and ecosystems based upon the selection criteria and the ranking, is that then enough? Will the top 5% provide sufficient viable habitat for a given species. And for a given blob, is the idea that if that area is conserved, it would sustain whatever species that represents?

Kevin: To clarify, this does not deal with species-specific concerns, but rather with ecological assessment only. So we are not saying explicitly that these blobs are associated with particular species. Right now, this is not about species, but rather ecosystems. However, we do have an implicit assumption that most species will be conserved through this approach. To the second question, there is no guarantee at all that a given conservation step or design will conserve a species or allow us to meet objectives for that species. What we do have is an assumption that conserving the most important places on the landscape that provide integrity and habitat will help us achieve our conservation goals – but we'll only know that through later monitoring. No single core area is intended to be a viable conservation preserve for a given species. Undoubtedly, it takes a network of protected land across the landscape.

Scott: Remember, the core areas are not the only thing. They are perhaps the most important places to conserve, and we may think of them as nodes in a connected network, but they are not intended to be necessary and sufficient to meet conservation goals.

Question (Kevin): An important question for the Core Team to answer is how much, and to what degree, do we want to allow roads to inhibit the spread of core areas? (see slide 24)

Dave Paulson: In terms of roads, they function at different levels for different species. I'm leaning more towards using major roads as functional barriers unless you are able to figure out what minor roads and small culverts are functioning as other barriers. Maybe we could include those smaller barriers at connecting points.

Kevin: That seems reasonable.

Ken Elowe: I've seen this addressed in the past as a function of road size vs. traffic volume. But I've also seen efforts to maintain connectivity at the local scale.

Kevin: Roads, traffic rates, etc. are definitely being factored into connectivity at the local and regional scales. We do consider connectivity as being between nodes rather than within nodes. But we hadn't proposed including corridors within a core. Eric has raised that issue and it's worth thinking more about how to do it.

Discussion at noon about time remaining: Andrew Mac suggests having a separate conference call with the aquatics team later to go over the aquatics portion of Kevin's presentation. Today the breakout team has a tight agenda for which some people who are present are tight. All agree to schedule additional time to finish Kevin's presentation.

Kevin: Questions for the Core Team to ponder:

- 1) Do we use the unweighted vs. weighted selection index, and if weighted, how do we weight it?
- 2) Should the core selection index be scaled for the entire CT River watershed or by HUC8?
 - a. Scaling by the watershed would ensure we get the top x% (the best of each macrogroup/ecosystem) wherever it occurs in the watershed. Using HUC8's for scaling ensures better distribution of core areas throughout the watershed, but may result in tradeoffs by losing some high value areas. Some suggest that it is important to have that distribution via HUC8's for connectivity in the watershed in light of uncertainty over how these ecological systems might change over time. It's an ecological tradeoff, but also a socio-political issue potentially, if we just look at watershed scaling and the disproportionate concentration of core areas likely to occur in northern, more undeveloped sections of the watershed.

Mitch: I think in general the answer is we need both – whether it's HUC8 or a state boundary, we want to know where the best of the best is at the whole watershed

scale, but if you're a local office working at a smaller scale, then those people also want to know what the best is in their part of the world.

Kevin: I appreciate that, but we do have to be careful how many things are allowed to vary, so that we don't end up with 20 different designs. A few alternatives might be ok, and perhaps scaling by some local scale is one different design.

Eric: Seems like it would be useful with the HUC8 approach to do some checking with local folks about whether the top 20% is actually good.

Kevin: I completely agree.

- 3) Tiering? Yes, no, how many tiers?
- 4) Top what %?
- 5) What will be the most useful way to display results for the Core Team and for users down the road?